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Notes:

1. Untranslatable words are replaced with asterisks (****).
2. Texts in the figures are not translated and shown as it is.

Translated: 03:59:20 JST 12/18/2009

Dictionary: Last updated 12/14/2009 / Priority:

FULL CONTENTS

[Claim(s)]

[Claim 1]A map retrieval device comprising:

A displaying means which displays a retrieval object thing of a line or two-dimensional shape on a map.

A search means to search said retrieval object thing displayed on said map according to a specified search condition.

[Claim 2]Said displaying means displays said retrieval object thing specified by connecting two or more coordinates points in a two-dimensional coordinate system set up on said map, and, [said search means] The map retrieval device according to claim 1 detecting said retrieval object thing which exists in a search field decided by said search condition.

[Claim 3]A map retrieval device comprising:

A displaying means which displays a retrieval object thing on a map.

A search means to detect said retrieval object thing which makes a field within specification distance a search field from a line specified on said map, and exists in the search field.

[Claim 4]A map retrieval device comprising:

A displaying means which displays a retrieval object thing on a map.

A search means to detect said retrieval object thing which is within distance specified from the starting point specified on said map.

[Claim 5]A map retrieval device comprising:

A displaying means which displays a retrieval object thing on a map.

A search means to detect said retrieval object thing which can go within travel time specified from the starting point specified on said map.

[Claim 6]A map search method comprising:

A display process of displaying a retrieval object thing of a line or two-dimensional shape on a map.

A search process of searching said retrieval object thing displayed on said map according to a specified search condition.

[Claim 7] Said display process displays said retrieval object thing specified by connecting two or more coordinates points in a two-dimensional coordinate system set up on said map, and, [said search process] The map search method according to claim 6 detecting said retrieval object thing which exists in a search field decided by said search condition.

[Claim 8] A map search method comprising:

A display process of displaying a retrieval object thing on a map.

A search process of detecting said retrieval object thing which makes a field within specification distance a search field from a line specified on said map, and exists in the search field.

[Claim 9] A map search method comprising:

A display process of displaying a retrieval object thing on a map.

A search process of detecting said retrieval object thing which is within distance specified from the starting point specified on said map.

[Claim 10] A map search method comprising:

A display process of displaying a retrieval object thing on a map.

A search process of detecting said retrieval object thing which can go within travel time specified from the starting point specified on said map.

[Claim 11] By computer, are a map search control program which searches a retrieval object thing displayed on a map the recorded recording medium, and, [said control program] A recording medium which recorded a map search control program making said retrieval object thing which makes said computer display a retrieval object thing as a line or two-dimensional shape on said map, and is displayed on it on said map according to a set-up search condition search.

[Claim 12] In a two-dimensional coordinate system by which said control program is set as said computer on said map, A recording medium which recorded the map search control program according to claim 11 detecting said retrieval object thing which exists in a search field which displays said retrieval object thing specified by connecting two or more coordinates points, and is decided by said search condition.

[Claim 13] By computer, are a map search control program which searches a retrieval object thing displayed on a map the recorded recording medium, and, [said control program] A recording medium which recorded a map search control program making said computer display a retrieval object thing on said map, and making said retrieval object thing which makes a field within specification distance a search field from a line specified on said map, and exists in the search field detect.

[Claim 14] By computer, are a map search control program which searches a retrieval object thing displayed on a map the recorded recording medium, and, [said control program] A recording medium which recorded a map search control program making said computer display a retrieval object thing on said map, and making said retrieval object thing which is within distance specified from the starting point specified on said map detect.

[Claim 15] By computer, are a map search control program which searches a retrieval object thing displayed on a map the recorded recording medium, and, [said control program] A recording medium

which recorded a map search control program making said computer display a retrieval object thing on said map, and making said retrieval object thing which can go within travel time specified from the starting point specified on said map detect.

[Detailed Description of the Invention]

[0001]

[Field of the Invention]This invention relates to the recording medium which recorded the map retrieval device, map search method, and map search control program which search the retrieval object thing displayed on a digital map according to a search condition.

[0002]

[Description of the Prior Art]Conventionally, as what retrieves the information distributed on a map using a personal computer etc., a search center position and a retrieving range are specified, and the application software which performs what is called circumference search that searches the store which is in a fixed distance from the search center position, a person's location, etc. is known.

[0003]

[Problem to be solved by the invention]However, since what has a punctiform store etc. was made into a retrieval object, a two-dimensional thing with a line thing or fixed area, such as a route, was not able to be searched with above-mentioned application software. For example, the track etc. which pass search of other tracks which intersect a certain track, and specified within the limits were not able to be searched.

[0004]In order to refer to above-mentioned application software centering on a search center position, the along [what is called a line] search which searches the store etc. which are in constant distance from the specified line was difficult. For example, if it is going to carry out such along [a line] search, it is necessary to perform circumference search along the appointed line many times, and search work will become complicated.

[0005]In order to refer to this kind of application software based on the distance in a straight line on a map generally, what is called distance search etc. that search the point which serves as [position / specified] a fixed distance from what is called time [to search the point which can go by a definite period of time] search, or the specified position are difficult.

[0006]Then, this invention was made in view of the above problems, and is ****. The purpose is to provide the recording medium which recorded the map retrieval device, map search method, and map search control program which can perform search of the thing which has line **, or a two-dimensional thing, and can perform along [a line] search, time search, or distance search.

[0007]

[Means for solving problem]In order to attain such a purpose, the map retrieval device of this invention comprises the following:

The displaying means which displays the retrieval object thing of a line or two-dimensional shape on a map.

A search means to search the retrieval object thing displayed on a map according to the specified search condition.

[0008]The map retrieval device concerning this invention displays the retrieval object thing in which the above-mentioned displaying means is specified by connecting two or more coordinates points in the two-dimensional coordinate system set up on a map, and the retrieval object thing which exists in the search field where the above-mentioned search means is decided by a search condition is detected.

[0009]The map search method of this invention comprises:

The display process of displaying the retrieval object thing of a line or two-dimensional shape on a map.
The search process of searching the retrieval object thing displayed on a map according to the specified search condition.

[0010]The map search method concerning this invention displays the retrieval object thing in which the above-mentioned display process is specified by connecting two or more coordinates points in the two-dimensional coordinate system set up on a map, and the retrieval object thing which exists in the search field where the above-mentioned search process is decided by a search condition is detected.

[0011][the recording medium which recorded the map search control program concerning this invention]
By computer, are the map search control program which searches the retrieval object thing displayed on the map the recorded recording medium, and, [the control program] The retrieval object thing which makes a computer display a retrieval object thing as a line or two-dimensional shape on a map, and is displayed on a map according to the set-up search condition is made to search.

[0012][the recording medium which recorded the map search control program concerning this invention]
The above-mentioned control program displays the retrieval object thing specified as a computer by connecting two or more coordinates points in the two-dimensional coordinate system set up on a map, and makes the retrieval object thing which exists in the search field decided by a search condition detect.

[0013]According to these inventions, since the line thing displayed on a map and a two-dimensional thing can be searched according to the set-up search condition, search of a road or a track or search of **, such as a large institution, is attained.

[0014]The map retrieval device of this invention comprises:

The displaying means which displays a retrieval object thing on a map.

A search means to detect the retrieval object thing which makes the field within specification distance a search field from the line specified on the map, and exists in the search field.

[0015]The map search method of this invention comprises:

The display process of displaying a retrieval object thing on a map.

The search process of detecting the retrieval object thing which makes the field within specification distance a search field from the line specified on the map, and exists in the search field.

[0016][the recording medium which recorded the map search control program concerning this invention]
By computer, are the map search control program which searches the retrieval object thing displayed on

the map the recorded recording medium, and, [a control program] A computer is made to display a retrieval object thing on a map, the field within specification distance is made into a search field from the line specified on the map, and the retrieval object thing which exists in the search field is made to detect. [0017]According to these inventions, since a search field can be chosen along the line specified on the map, the store etc. which exist in the person who resides in along a track and a road, or along a track and a road can be easily searched by specifying the track and road on a map.

[0018]The map retrieval device of this invention comprises:

The displaying means which displays a retrieval object thing on a map.

A search means to detect the retrieval object thing which is within the distance specified from the starting point specified on the map.

[0019]The map retrieval device of this invention comprises:

The displaying means which displays a retrieval object thing on a map.

A search means to detect the retrieval object thing which can go within the travel time specified from the starting point specified on the map.

[0020]The map search method of this invention comprises:

The display process of displaying a retrieval object thing on a map.

The search process of detecting the retrieval object thing which is within the distance specified from the starting point specified on the map.

[0021]The map search method of this invention comprises:

The display process of displaying a retrieval object thing on a map.

The search process of detecting the retrieval object thing which can go within the travel time specified from the starting point specified on the map.

[0022][the recording medium which recorded the map search control program concerning this invention] By computer, are the map search control program which searches the retrieval object thing displayed on the map the recorded recording medium, and, [a control program] A computer is made to display a retrieval object thing on a map, and the retrieval object thing which is within the distance specified from the starting point specified on the map is made to detect.

[0023][the recording medium which recorded the map search control program concerning this invention] By computer, are the map search control program which searches the retrieval object thing displayed on the map the recorded recording medium, and, [a control program] A computer is made to display a retrieval object thing on a map, and the retrieval object thing which can go within the travel time specified from the starting point specified on the map is made to detect.

[0024]According to these inventions, what is called distance specification search that searches the point which serves as a fixed distance from the specified position is attained, and what is called time [to search the point which can go by a definite period of time] specification search is attained from the specified position.

[0025]

[Mode for carrying out the invention] Hereafter, the embodiment of this invention is described based on an accompanying drawing. In each figure, the same numerals are given to the same element, and explanation is omitted. The size ratio of Drawings is not necessarily in agreement with the thing of explanation.

[0026] The outline of the hard structure of the map retrieval device concerning this embodiment is shown in drawing 1.

[0027] As shown in drawing 1, the map retrieval device 1 is provided with CPU2 which controls the whole device. The input part 3 is connected to CPU2. The input part 3 is an input means for inputting the contents of processing in devices, such as a setup of a search condition, for example, a keyboard, a mouse, etc. are used. The main memory part 4 is connected to CPU2. The main memory part 4 is a memory measure which memorizes the map search control program etc. which were recorded on the recording medium, for example, a hard disk drive unit etc. are used.

[0028] The indicator 5 is connected to CPU2. The indicator 5 is a displaying means which carries out image display of the map etc., for example, a liquid crystal display etc. are used. The printing department 6 is connected to CPU2. The printing department 6 is one of the output means which print the map etc. by which image display was carried out by the indicator 5, and a printer etc. are used. The auxiliary memory part 7 is connected to CPU2. CD-ROM8 is connected to CPU2 via the driver. CD-ROM8 is the recording medium which recorded the map search control program.

[0029] The composition of the control program recorded on CD-ROM is shown in drawing 2.

[0030] As shown in drawing 2, the control program recorded on CD-ROM8 is constituted by the GUI (Graphical User Interface) control part 10, the map display control section 20, the object control part 30, and the retrieval control section 40. The GUI control part 10 performs control which displays a button etc. on the indicator 5 by the input part 3 and to which a map display, a search condition setup, or a printing job is made to carry out according to operation of the button. The map display control section 20 controls map data reading and the display of map data.

[0031] The object control part 30 controls reading of object data and the display of an object. Here, an "object" means the retrieval object thing displayed on a map. Two-dimensional things, such as an institution which has a line thing and vast sites, such as a person and a location of a store, are also contained in this object. [, such as not only a punctiform thing but a road and a track,] The retrieval control section 40 controls a setup and search operation of a search condition.

[0032] This control program is memorized by the main memory part 4, and is used for map search processing. The map data for image display may be suitably read from CD-ROM8 if needed in the case of the map search processing, and the auxiliary memory part 7 may be made to memorize those map data, and it may read from the auxiliary memory part 7 suitably.

[0033] Next, operation and the map search method of the map retrieval device 1 are explained.

[0034] Drawing 3 is a flow chart which shows operation and the map search method of the map retrieval device 1. Step S10 (it only expresses "S10" hereafter.) of drawing 3 It is the same about other steps. Map data is read and the display of a map is performed on the screen of the indicator 5 so that it may be shown. And it shifts to S12 and object data is read, and as shown in drawing 4, the objects 61-63 are displayed in piles on the map 51 displayed on the screen of the indicator 5.

[0035] The object 61 shows locations, such as a person or a store, and is set up as a coordinates point in

the two-dimensional coordinate system set as the map 51, and a display position is pinpointed. The object 62 shows the track of a train, and is set up as a line segment which connects two or more coordinates points in the two-dimensional coordinate system set as the map 51, and a display position is pinpointed. The object 63 shows the road through which vehicles pass, and is set up as a line segment which connects two or more coordinates points like a track in the two-dimensional coordinate system set as the map 51, and a display position is pinpointed.

[0036]Subsequently, it shifts to S14 and it is judged whether a search condition setup was performed. A setup of a search condition means selection of two or more retrieval objects, search methods, etc. The objects 61-63 correspond as a retrieval object, and the part or all can be chosen as a retrieval object among these objects 61-63. As a search method, there are along [a line] search, inclusion search, distance search, and time search, and one search method can be chosen from among these.

[0037]It is judged whether in these S14, when a setup of the search condition was performed, it shifted to S16 and specification of a retrieving range was performed. Specification of a retrieving range means specifying suitably the retrieving range according to the selected search method.

[0038]In along [a line] search, specification of this retrieving range is performed by specifying the starting point of a search line, a terminal point, and the distance from a search line. That is, specification of the retrieving range of along [a line] search is performed by inputting the distance from the line AB, after moving a pointer to the position which serves as the starting point A on the map 51 first, setting up the starting point A, moving a pointer to the position used as the terminal point B and setting up the terminal point B, as shown in drawing 5.

[0039]In inclusion search, specification of a retrieving range is performed by specifying distance from a search center position and its center position. That is, as shown in drawing 6, after moving a pointer to the position which turns into the center position C on the map 51 first and setting up the center position C, it is carried out by setting up the retrieving range D centering on the center position C. In this case, the shape of the retrieving range D can choose a rectangle, circular, a polygon, etc. arbitrarily.

[0040]In distance search, specification of a retrieving range is performed by specifying the starting point and distance. That is, after moving a pointer to the position which serves as the starting point on a map and setting up the starting point, it is carried out by inputting the distance of the distance from the starting point.

[0041]In time search, specification of a retrieving range is performed by specifying the starting point and travel time. That is, after moving a pointer to the position which serves as the starting point on a map and setting up the starting point, it is carried out by inputting the travel time by vehicles or a train from the starting point.

[0042]In S16 of drawing 3, if retrieving range specification is performed, it will shift to S18 and search processing will be performed. Search processing is performed by detecting the retrieval object which exists in the specified retrieving range.

[0043]For example, it is carried out by detecting the retrieval object which has a coordinates point in the closed region specified as a retrieving range by along [a line] search when a person's location etc. had a punctiform retrieval object. It is carried out by detecting what crosses that in which a part is contained in the closed region specified as a retrieving range by along [a line] search when a line [a retrieval object / a road, a track, etc.], the thing contained completely in the closed region, and its closed region.

When it is two-dimensional things, such as an institution to which a retrieval object has a vast site by along [a line] search, it is carried out by detecting what crosses that in which a part is contained in the closed region specified as a retrieving range, the thing contained completely in the closed region, and its closed region.

[0044]Search processing in inclusion search is also performed by detecting that to which the coordinates point of a retrieval object exists in the closed region specified as a retrieving range like along [a line] search, the thing contained, and the thing to cross.

[0045]On the other hand, search processing of distance search is performed by detecting the retrieval object which is within the appointed distance from the specified position of the starting point, for example. For example, when moving trucking is a road, it inputs into CD-ROM8 beforehand by using distance from the crossing in the road on a map to a crossing as distance data, Distance data is integrated one by one in the direction which extends from the position of the starting point, and let the retrieval object which can use a road portion until it reaches specification distance be search results. When moving trucking is a track, it inputs into CD-ROM8 beforehand by using distance from the station in a track to a station as distance data, and distance data is integrated one by one in the direction which extends from the position of the starting point, and let the retrieval object which can use a track portion until it reaches specification distance be search results.

[0046]Search processing of time search is performed by detecting the retrieval object which can go by vehicles, train, etc. within the appointed time from the specified position of the starting point. Let the retrieval object which can use a road portion until it inputs into CD-ROM8 beforehand by using each vehicles travel time from the crossing in a road to a crossing as temporal data, it integrates temporal data one by one in the direction which extends from the position of the starting point and it reaches at the appointed time in the case of vehicles be search results. Let the retrieval object which can use a track portion until it inputs into CD-ROM8 by using train travel time as temporal data from the station in a track to the station beforehand, it integrates temporal data one by one in the direction which extends from the position of the starting point and it reaches at the appointed time in the case of a track be search results.

[0047]And it shifts to S20 and the display of search results is performed. In along [a line] search, as shown in drawing 7, the portion of a search field is displayed on the different color or pattern from a non-searching field, and the retrieval object in a search field is displayed by different color from the thing of a non-searching field. The retrieval object in a search field is displayed as a table. With this table, the contents of the retrieval object can grasp easily.

[0048]Also in inclusion search, the portion of a search field is displayed on the different color or pattern from a non-searching field like along [a line] search, and it is displayed by the color in which the retrieval object in a search field differs from the thing of a non-searching field. The retrieval object in a search field is displayed as a table.

[0049]On the other hand, the road or track included in a retrieving range is displayed as search results of distance search and time search by different color from the thing of a non-retrieving range.

[0050]And when it shifts to S22 of drawing 3, it is judged whether printing start operation was carried out and operation of a printing start is carried out, it shifts to S24 and a printing job is performed. A printing job is processing which outputs as a document the map 51 displayed as search results, a table, etc., for example, in along [a line] search, the table which indicated the display screen of the search results

shown in drawing 7 and the searched contents of the object is printed by the document, and it is outputted. The table which indicated the display screen of search results and the searched contents of the object is printed and outputted to a document like [in inclusion search] along [a line] search. On the other hand, in distance search and time search, the display screen of search results is printed by the document and outputted. And control processing is ended after the end of a printing job in S24.

[0051]As mentioned above, since search of the line displayed on a map or two-dimensional shape can be performed according to the recording medium which recorded the map retrieval device 1, map search method, and map search control program concerning this embodiment, search or a large institution of a road or a track, etc. can be searched as a retrieval object.

[0052]Since a search field can be chosen along the line specified on the map, the store etc. which exist in along the person who resides in along a track and a road or a track, and a road can be easily searched by specifying the track and road on a map.

[0053]What is called time [to search the point which can perform what is called distance specification search that searches the point which serves as a fixed distance from the specified position, and can go by a definite period of time from the specified position] specification search can be performed.

[0054]Although this embodiment explained the case where the recording medium which recorded the map search control program was applied to CD-ROM8, The recording medium concerning this invention may not be restricted to such a thing, and as long as it is a recording medium which can record a map search control program, they may be other things.

[0055]

[Effect of the Invention]According to this invention, the following effects can be acquired as explained above.

[0056]That is, since search of the line displayed on a map or two-dimensional shape can be performed, search or a large institution of a road or a track, etc. can be searched as a retrieval object.

[0057]Since a search field can be chosen along the line specified on the map, the store etc. which exist in along the person who resides in along a track and a road or a track, and a road can be easily searched by specifying the track and road on a map.

[0058]What is called time [to search the point which can perform what is called distance specification search that searches the point which serves as a fixed distance from the specified position, and can go by a definite period of time from the specified position] specification search can be performed.

[Brief Description of the Drawings]

[Drawing 1]It is an outline figure showing the hard structure of the map retrieval device concerning an embodiment.

[Drawing 2]It is a figure showing the composition of the control program in the recording medium concerning an embodiment.

[Drawing 3]It is a flow chart which shows operation of the map retrieval device concerning an embodiment.

[Drawing 4]It is an explanatory view of the map search concerning an embodiment.

[Drawing 5] It is an explanatory view of the map search concerning an embodiment.

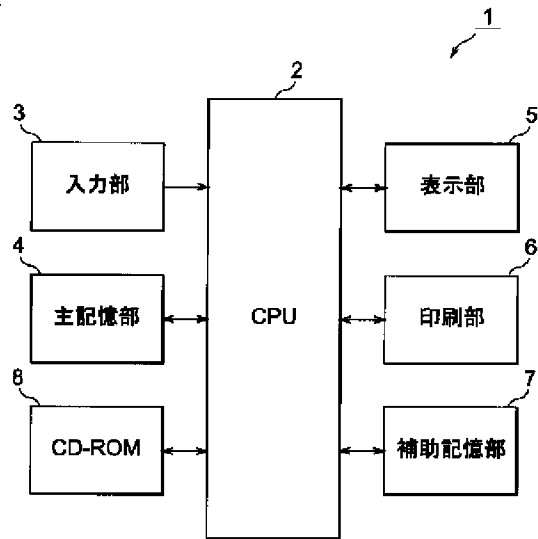
[Drawing 6] It is an explanatory view of the map search concerning an embodiment.

[Drawing 7] It is an explanatory view of the search results by the map search concerning an embodiment.

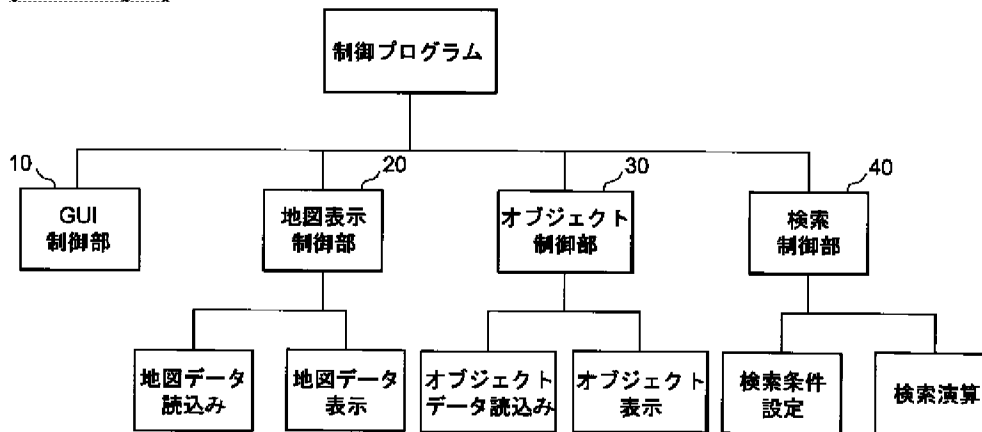
[Explanations of letters or numerals]

1 [-- A printing department, 8 / -- CD-ROM (recording medium).] -- A map retrieval device, 2 -- CPU, 3 -- An input part, 6

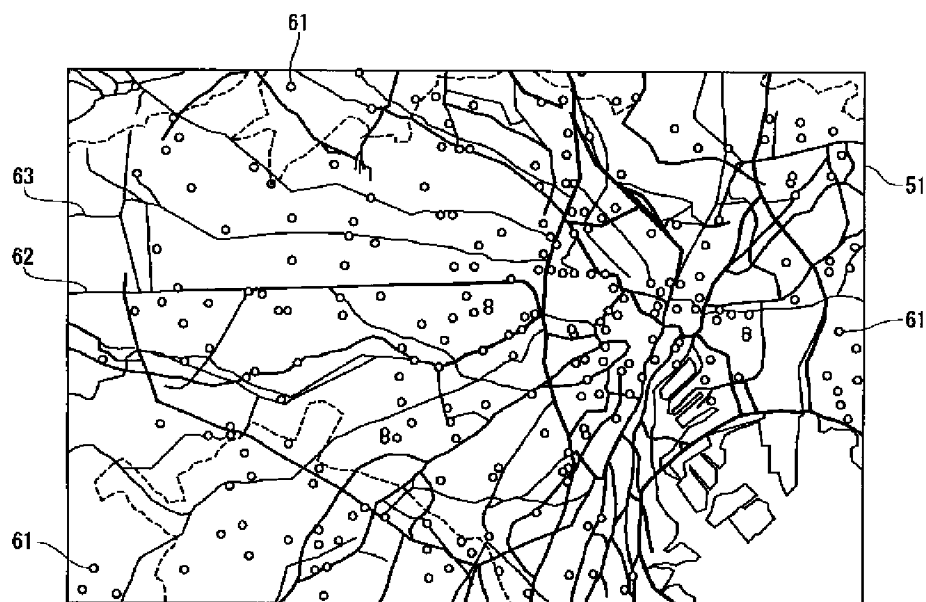
[Drawing 1]



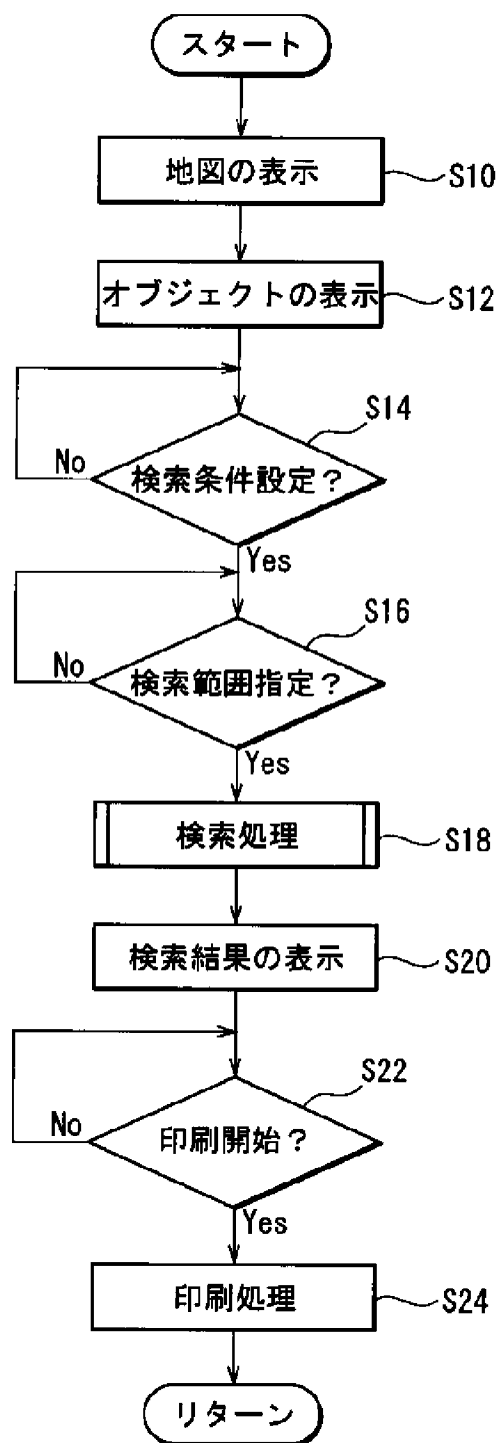
[Drawing 2]



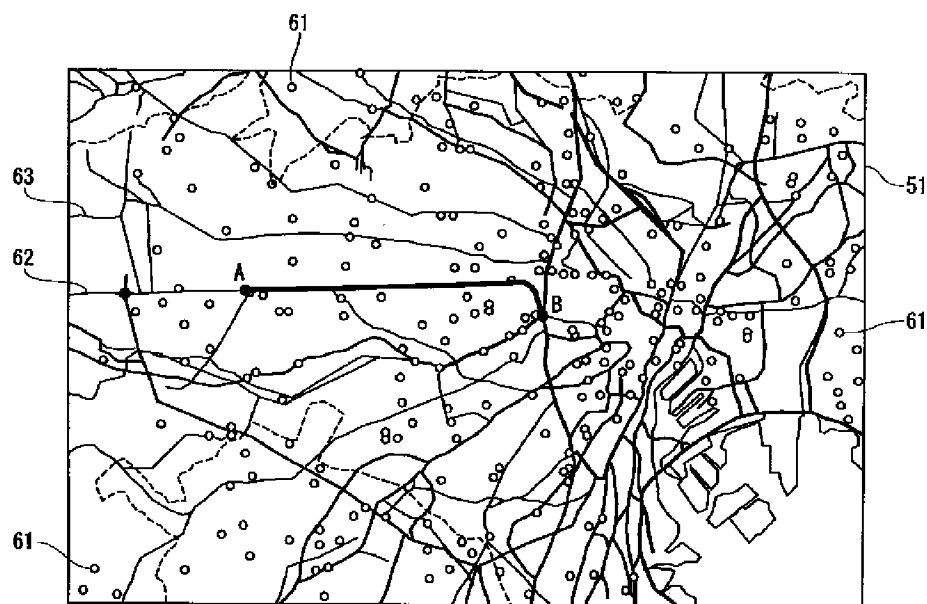
[Drawing 4]



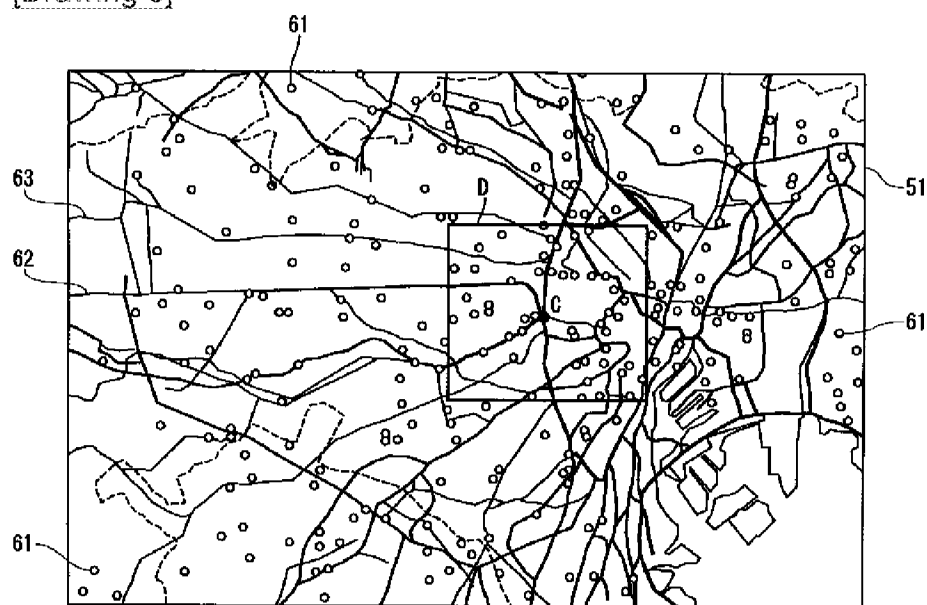
[Drawing 3]



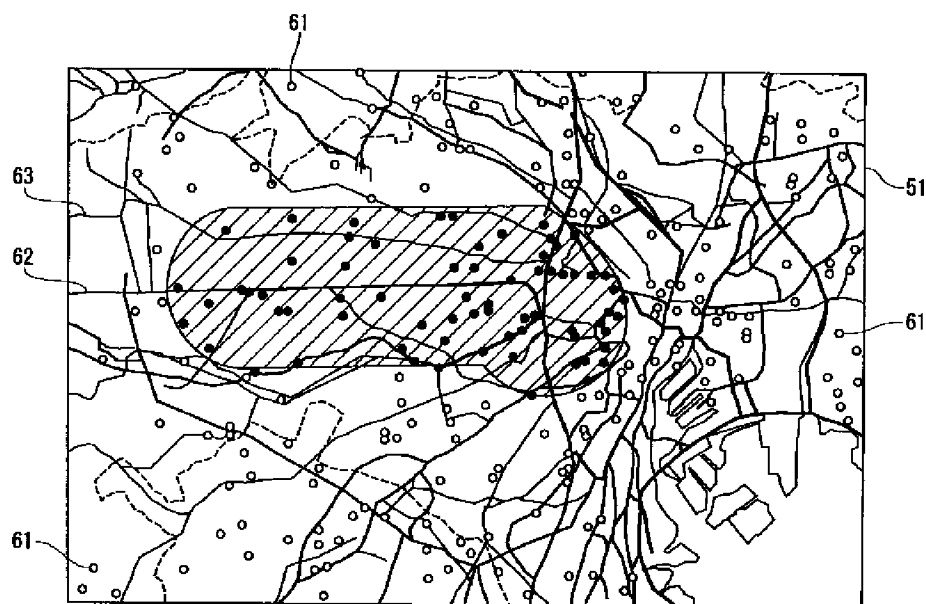
[Drawing 5]



[Drawing 6]



[Drawing 7]



[Translation done.]